

From: Jin Chung
To: Stephen Sands *NR*
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Subject: Davis Besse Inspections

We have reviewed the concerns raised by Region III on D-B CRDM inspection. Based on discussion within DSSA and review by Reinhart, I am enclosing the our understanding of the compensatory measures proposed by the licensee during November 28 meeting and supplemental letters before and after the meeting. If you have any question, please contact me at 415-1071, JWC2@NRV.gov.

CC: Allen Hiser; Bill Bateman; F. Mark Reinhart; Richard Barrett; Steven Long; Suzanne Black

B-195

Failure of Recirculation and MLOCA Risk Contribution: Davis -Besse
(Jin W. Chung, 12/03/2001)

Success Criteria to mitigate a medium LOCA for Davis-Besse require that High Pressure Injection (HPI) and Decay Heat Removal by Low Pressure Injection (LPI) have to be successful, followed by successful Low Pressure Recirculation (LPR). According to Davis-Besse IPE study, the switchover from injection to recirculation requires manual operation by operator. Operator actions may include timely acknowledgment of alarms which indicates low water levels from the injection water source (borated water storage tank), securing injection system(s) and pumps properly, and swap-over to sump or other water sources for recirculation. Some of the valves may have to be operated by local operators locally outside of the control room as a procedural requirements and preparation of shutdown cooling, such as unblocking RHR isolation valve, and manual valve for pressurizer, among others. Verification of systems, valves, and pumps, and manipulation of several valves are also part of the control room operation. The total time from initiation of a MLOCA to the time needed to complete the human action is limited to 100 minutes with an window of 18 minutes for the action that would need to be initiated and to be considered successful, according to IPE. It also identified that the failure of LPR for a MLOCA (MX_M sequence) is the most important risk contributor to core damage in an event of MLOCA, accounting for almost 80% of total CDF contributed by MLOCA.

When Davis-Besse proposed remedial compensatory measures to reduce the risk for the proposed extended operation, it was NRC staff's understanding that the compensatory steps would be implemented starting from December 5, 2000 until February 2002 shutdown, and would include reduction of operating temperature and various actions to reduce the CCDP as much as 20%. It was clearly understood by NRC staff that a principal remedial action would include additional training of operators and an additional operator to assure that switchover from injection phase to recirculation could be achieved with minimal risk or the likelihood of the LPR failure would be minimized. It appears that the proposed action by the licensee to provide an unlicensed operator for the LPR switchover with other collateral duty does not meet the staff's understanding of a "dedicated operator". Therefore, the staff does not see the reduction of CCDP as proposed during the November meeting. The above understanding is consistent with response letter dated November 30, 2001 in response to the November 28, 2001 meeting. The licensee letter included a compensatory actions and effect of risk in table 1, in which dedicated operator for initiation of LPR would reduce CCDP by 17% and baseline CDF by 1%. The table also presented that deferral of online maintenance on HPI and LPI would also reduce the CDF by 17% and 6% in CCDP and baseline CDF respectively.